Efficient in vitro multiple shoots regeneration system from rice shoot apex in recalcitrant Malaysian Indica rice cultivars (Oryza sativa L.)

ABSTRACT

Development of *in vitro* rice shoot regeneration system can contribute to new advances for the selection of stress tolerant cultivars as well as production of elite cultivar through genetic transformation approach. Multiple shoot induction was carried out in two widely cultivated Malaysian *indica* rice MR 220 and MR 253 using 10 mm rice shoot apex along with coleoptile isolated from 4 days old seedlings. The explants were cultured on a Murashige and Skoog (MS) media supplemented with various concentrations of 6-benzylaminopurine (BAP) and Kinetin (KIN) at (0 – 10 mg/L) for two culture periods 2 and 4 weeks. The results showed that the optimal multiple shoots growth were observed in media supplemented with 6 mg/L KIN, which induced an average (10.30 ± 0.95) shoots for MR 220 and (6.67 ± 0.57) shoots for MR 253. Results from biochemical changes studies indicated that a relatively higher total chlorophyll and soluble protein content were obtained in rice shoots treated with KIN as compared to BAP suggesting KIN is more suitable in the *in vitro* multiple shoots regeneration system of Malaysian *indica* rice.

Keyword: Cytokinin; *in-vitro*; Rice; Shoot apex; Regeneration